RUST GEOTECH INC.

Spectral Gamma-Ray Borehole
Log Data Report

Borehole 60-10-05

Log Event A

Borehole Information

Farm : U	**Tank :** U-110	**Site Number :** 299-W18-104
N-Coord : 37,857	**W-Coord :** 75,612	**TOC Elevation :** 667.43
Water Level, ft :	**Date Drilled :** 6/30/1974	

Casing Record

Type : Steel-welded	Thickness : 0.280	ID, in. : 6
Top Depth, ft. : 0	Bottom Depth, ft. : 125	

Borehole Notes:
The top of the casing is even with the ground surface. This borehole is located at the base of a small hill that extends to the south and rises approximately 4 ft.

Equipment Information

Logging System : 1	**Detector Type :** HPGe	**Detector Efficiency:** 35.0 %
Calibration Date : 10/1995	**Calibration Reference :** GJPO-HAN-3	**Logging Procedure :** P-GJPO-1783

Log Run Information

Log Run Number : 1	**Log Run Date :** 11/30/1995	**Logging Engineer:** Alan Pearson
Start Depth, ft.: 0.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 25.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Log Run Number : 2	**Log Run Date :** 12/1/1995	**Logging Engineer:** Alan Pearson
Start Depth, ft.: 125.5	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 34.5	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Log Run Number : 3	**Log Run Date :** 12/4/1995	**Logging Engineer:** Bob Spatz
Start Depth, ft.: 24.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 35.5	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

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Analysis Information

Analyst : H.D. Mac Lean

Data Processing Reference : P-GJPO-1787 Analysis Date : 6/10/1996

Analysis Notes :

The log of the borehole was completed in three runs. The pre- and post-field verification spectra indicate the logging system was operating properly during data collection. The energy/channel drift observed during the logging runs remained within an acceptable range for the search parameters used by the processing software; multiple energy calibrations were not required to process the data. The channel drift for the high energy portion of the post survey verification spectrum for run 2 did not identilfy a 2614-keV peak; the peak at 2447 keV was used for calibration of the high energy portion of the spectrum. This slight drift observed has no effect on the concentration calculations of lower energy radionuclides such as Cs-137. The monitored portions of the verification spectra indicated no deterioration in the efficiency of the detector. Data overlaps occurred when the same depth intervals were logged between the log runs. The calculated concentrations were within the statistical uncertainty of the measurements, indicating acceptable repeatability.

The casing thickness is presumed to be 0.280 inch (in.), on the basis of published thickness for schedule-40, 6-in. steel casing. Casing-correction factors for a 0.280-in.-thick steel casing were applied during analysis.

Cs-137 was the only man-made radionuclide detected. Cs-137 occurred between the ground surface and a depth of 6 ft. It also was recognized between depths of 11 and 16 ft, from 20 to 26 ft, and at the bottom of the borehole. The concentrations of Cs-137 in the continuous zone of the upper part of the borehole ranged from 0.2 to about 6 pCi/g. The maximum concentration of 5.6 pCi/g was measured at a depth of 12.5 ft below the surface. In addition, a zone of elevated Cs-137 concentration (about 5 pCi/g) was observed at the ground surface.

Details regarding the interpretation of the data for this borehole are presented in the Tank Summary Data Report for tank U-110.

Log Plot Notes:

Separate log plots show the man-made (e.g., Cs-137) and the naturally occurring radionuclides (K-40, U-238, and Th-232). The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

A combination plot includes both the man-made and natural radionuclides, in addition to the total gamma derived from the spectral data and the Westinghouse Hanford Company (WHC) Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data from WHC with no attempt to adjust the depths to coincide with the SGLS data.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the minimum detection level (MDL). The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.